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9109/04

Application Number

Filing Date

10791377 - GAY:12828

PTO/SE21 (04-04)
Approved for use through 97/31/2006, OMS 054-3001
U.S. Pastert and Temperson Office, U.S. OSF 97/41/2006, OMS 054-3001
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10/791.377

March 2, 2004

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(to be used for all correspondence after initial filing)		Art Unit	not yet assigned			
			Examiner Name	not yet assigned		
Total Number of Pages	in This Submission		Attorney Docket Number	6550-000057/CPE		
ENCLOSURES (check all that apply)						
Fee Transmittal F	orm	☐ Drawing(s)		After Allowance Communication to Technology Center (TC)		
Fee Attached		Licensir	ng-related Papers	Appeal Communication to Board of Appeals and Interferences		
Amendment / Rep	y	Petition		Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)		
After Final			to Convert to a onal Application	Proprietary Information		
Affidavits/decl	aration(s)		of Attorney, Revocation of Correspondence Address	Status Letter		
Extension of Time Request		Terminal Disclaimer		Other Enclosure(s) (please identify below):		
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Firm or Harness, Dickey & Pierce, P Individual name			Attorney Name	Reg. No. 51,120		
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TPE		$\overline{}$	Application Number	10/791	,377
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Fee Transmittal F	om	Drawing		Afte	er Allowance Communication to chnology Center (TC)
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Response to I Parts under 3 1.52 or 1.53	Missing	•			:
	-SIGNAT	URE OF A	PPLICANT, ATTORNE	, OR AGEN	
Firm or Individual name	Harness, Dickey & P	Pierce, P.L.C	Attorney Name Michael J. Lang, Ph.D		Reg. No. 51,120
Signature Much Ky					
Date 09/08/20104					
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EV 531 989 861 US (9/8/2004)

PATENT



#### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Filing Date:

10/791,377 March 2, 2004

Applicant:

M. Dantus et al.

Group Art Unit:

not vet assigned

Examiner:

not vet assigned

Title:

LASER SYSTEM USING ULTRA-SHORT LASER

PULSES

Attorney Docket: 6550-000057/CPE

Director of the United States Patent and Trademark Office P.O. Box 1450

Alexandria, VA 22313-1450

#### INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicant hereby submits an Information Disclosure Statement for consideration by the Examiner.

### I. <u>LIST OF PATENTS, PUBLICATIONS, AND OTHER INFORMATION</u>

The patents, publications and other information requested to be considered by the Office (except unpublished U.S. patent applications) are listed on Form 1449 attached hereto

#### II. COPIES

A. Submitted herewith is a legible copy of (i) each U.S. patent application publication and U.S. and foreign patent; (ii) each publication or that portion which caused it to be listed; (iii) for each cross-referenced pending U.S. application listed below in Section IV, the application specification including the claims, and any drawing of the application which caused it to be listed including the claims directed to that portion; and (iv) all other information or that portion which caused it to be listed.

B. \_\_\_\_ Any patents, publications or other information which are listed on Form 1449 or on the copies of PTO-892, but which are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

#### U.S. Serial Number

#### U.S. Filing Date

- C. X Because the present application was/is being filed after June 30, 2003, no copies of the U.S. patents or U.S. patent application publications which are listed on the attached Form 1449 are enclosed pursuant to the waiver of 37 C.F.R. § 1.98(a)(2)(i). Any foreign patent documents or non-patent literature listed on the attached Form 1449 are enclosed herewith.
- D.\_\_\_\_ This is a PCT application in the entry of the National Phase in the United States. A copy of the International Search Report is attached for the Examiner's information. The documents listed on the International Search Report are listed on the attached Form-1449 for consideration by the Examiner and for listing on any patent resulting from this application. If the International Search Report was from the US, EPO, or JPO search authorities, copies of these references should have been supplied to the USPTO under the trilateral agreement and are believed to be in the file of the above-identified application. (MPEP 1893.03(g))

### III. CONCISE EXPLANATION OF THE RELEVANCE (check at least one box)

- A. <u>X</u> Except as may be indicated below in (B), all of the patents, publications or other information are in the English language (concise explanation not required).
- B.\_\_\_\_ A concise explanation of the relevance of each patent, publication or other information listed that is not in the English language is as follows (see 37 C.F.R. § 1.98(a)(3)):
  - See the attached foreign patent office communication from a counterpart foreign application.
  - 2.\_\_\_\_English translations are provided.
  - 3.\_\_\_\_Other:
- C. X\_The following additional information is provided for the Examiner's consideration.

The following references appear somewhat more relevant than others cited herein: U.S. Patent Nos. 3,919,881; 3,988,704; 4,819,239; 4,913,934; 5,048,029; 5,585,913; 6,480,656; 6,504,612; and Weiner, A.M. (2000); Zheng, Z. (2001); Lozovoy, V.V. (2003). Notwithstanding, the Examiner is requested to review all of the cited references and make his/her own relevancy determinations.

## IV. CROSS REFERENCE TO RELATED APPLICATION(S)

A. X The Examiner is advised that the following co-pending application(s) contain(s) subject matter that may be related to the present application. By bringing this(these) application(s) to the Examiner's attention, Applicant(s) does(do) not waive the confidentiality provisions of 35 U.S.C. § 122.

Serial No. 10/791.377 ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THE SGH. /D.F./ Serial No. 10/265 211 Filing Date
January 28, 2002

Art Unit

#### V. THIS IDS IS BEING FILED UNDER

#### A. X 37 C.F.R. § 1.97(b): (check only one box)

- within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d) (37 C.F.R. § 1.97(b)(1)). No fee or certification is required.
- within three months of the date of entry of the national stage as set forth in §1.491 in an international application (37 C.F.R. § 1.97(b)(2)).
   No fee or certification is required.
- 3. X before the mailing of a first Office Action on the merits (37 C.F.R. § 1.97(b)(3)). No fee or certification is required. In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the certification under 37 C.F.R. § 1.97(e) below; or, if no certification has been made, charge our deposit account a fee in the amount of \$180.00 as required by 37 C.F.R. § 1.17(p).
- before the mailing of a first Office Action after the filing of a request for continued examination under 37 C.F.R. § 1.114. No fee or certification is required.

#### B. \_\_\_\_37 C.F.R. § 1.97(c): (check only one box)

before the mailing date of either any Final Office Action under 37 C.F.R.  $\S$  1.113, a Notice of Allowance under 37 C.F.R.  $\S$  1.311, or an action that otherwise closes prosecution.

- \_\_\_\_No certification; therefore, a fee in the amount of \$180.00 is required by 37 C.F.R. § 1.17(p).
- 2. \_\_\_\_See the certification below. No fee is required.

### C. \_\_\_\_37 C.F.R. § 1.97(d):

after the mailing date of either a Final Office Action under 37 C.F.R. § 1.113 or a Notice of Allowance under 37 C.F.R. § 1.311, yet on or before payment of the issue fee.

1. \_\_\_\_See the certification below. A fee in the amount of \$180.00 is required by 37 C.F.R. § 1.17(p).

#### VI. CERTIFICATION UNDER 37 C.F.R. § 1.97(e): (check only one box)

The undersigned hereby certifies that:

- A. \_\_\_\_ each item of information contained in this IDS was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS (See 37 C.F.R. § 1.97(e)(1)). See further statement under 37 C.F. R. 1.704(d) below in section VII, if applicable; or
- B. \_\_\_ no item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filling of this IDS (See 37 C.F.R. § 1.97(e)(2)).
- C. \_\_\_\_Some of the items of information were first cited in a communication from a foreign patent office. As to this information, the undersigned hereby certifies that each item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby certifies that no item of this remaining information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this IDS.

#### VII. STATEMENT UNDER 37 CFR 1.704(d)

The undersigned hereby states that:

— each item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty days prior to the filing of this IDS.

#### VIII. PAYMENT OF FEES (check only one box)

- A. \_\_\_\_ A check in the amount of \$180.00 is enclosed for the above-identified fee.
- B. \_\_\_\_Please charge Deposit Account No. 08-0750 in the amount of \$180.00 for the above-indicated fee. A duplicate copy of this paper is attached.

The above references are being cited only in the interest of candor and without any admission that they constitute statutory prior art, contain matter which anticipates the invention, or which would render the same obvious, either singly or in combination.

to a person of ordinary skill in the art. Furthermore, this Information Disclosure Statement shall not be construed as a representation that a search has been made.

If it is determined that this IDS has been filled under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition if necessary) and charge the appropriate fee to Deposit Account No. 08-0750.

Please charge any additional fees or credit any overpayment pursuant to 37 C.F.R. § 1.16 or § 1.17 to Deposit Account No. 08-0750.

Respectfully submitted,

Dated: 09/08/2004

Monte L. Falcoff

Reg. No. 37,617
Michael J. Lang, Ph.D.
Reg. No. 51,120

HARNESS, DICKEY & PIERCE, P.L.C. P.O. Box 828 Bloomfield Hills, Michigan 48303 (248) 641-1600 MLF/MJL/csd

# PATENT AND TRADEMARK OFFICE RMATION DISCLOSURE CITATION (Use several sheets if necessary)

Sheet 1 of 10

ATTORNEY DOCKET No.	SERIAL NO.		
6550-000057/CPE	10/791,377		
APPLICANT			
Dantus et al.			
FILING DATE	GROUP		
March 2, 2004	not vet assigned		

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U.S. F	PATENT DO	CUMENTS				
Ref. Desig.	Examiner's Initials	Document Number	Date	Name	Class/ Subclass	(If appropriate) Filing Date
1.	/D.F./	2003/0099264	10/2002	Dantus et al.		
2.		3,919,881	11/1975	Metherell		
3.		3,988,704	10/1976	Rice et al.		
4.		4,655,547	4/1987	Heritage et al.		
5.		4,746,193	5/1988	Heritage et al.		
6.		4,819,239	4/1989	Sharp et al.		
7.		4,866,699	9/1999	Brackett et al.		
8.		4,913,934	4/1990	Sharp et al.		
9.		4,928,316	5/1990	Heritage et al.		
10.		5,034,613	7/1991	Denk		
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13.		5,239,607	8/1993	da Silva et al.		
14.		5,526,171	6/1996	Warren		
15.		5,530,544	6/1996	Trebino et al.		
16.		5,585,913	12/1996	Hariharan et al.		
17.		5,754,292	5/1998	Kane et al.		
18.		5,759,767	6/1998	Lakowicz		
19.		5,774,213	6/1998	Trebino et al.		
20.	1	5,793,091	8/1998	Devoe		
21.	/D.F./	5,832,013	11/1998	Yessik et al.		

Examiner: /Delma Forde/ Date Considered:

04/21/2008

#### PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)

Sheet 2 of 10

ATTORNEY DOCKET No.	SERIAL NO.
6550-000057/CPE	10/791,377
APPLICANT	
Dantus et al.	
FILING DATE	GROUP
March 2, 2004	not yet assigned

U.S. PATENT DOCUMENTS						
Ref. Desig.	Examiner's Initials	Document Number	Date	Name	Class/ Subclass	(If appropriate) Filing Date
22.	/D.F./	5,936,732	8/1999	Smirl et al.		
23.		6,008,899	12/1999	Trebino et al.		
24.		6,042,603	3/2000	Dees et al.		
25.		6,057,919	5/2000	Machida et al.		
26.		6,111,251	8/2000	Hillenkamp		
27.		6,130,426	10/2000	Park et al.		
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29.		6,219,142	4/2001	Kane		
30.		6,259,104	7/2001	Baer		
31.		6,288,782	9/2001	Worster		
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34.		6,344,653	2/2002	Webb		
35.		6,480,656	11/2002	Islam et al.		
36.		6,504,612	1/2003	Trebino		
37.		6,566,667	5/2003	Partli et al.		
38.		6,577,782	6/2003	Leaird et al.		
39.	V	6,621,613	9/2003	Silberberg et al.		
40.	/D.F./	6,678,450	1/2004	Franson		

Examiner: /Delma Forde/ Date Considered: 04/21/2008

# PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)

Sheet 3 of 10

ATTORNEY DOCKET No.	SERIAL NO.
6550-000057/CPE	10/791,377
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March 2, 2004	not yet assigned

FORE	FOREIGN PATENT DOCUMENTS						
Ref. Desig.	Examiner's Initials	Document Number	Date	Country	Class/ Subclass	Translation Yes	No
1.	/D.F./	WO 02 061799	01/2002	PCT			
2.	/D.F./	WO 00 70647	11/2000	PCT			

OTHE	OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)				
Ref. Desig.	Examiner's Initials				
1.	/D.F./	Anderson, M.E. et al.; "The effects of noise on ultrashort-optical-pulse measurement using SPIDER"; Appl. Phys. B 70 (Suppl.); 2000; pgs. S85-S93.			
2.		Assion, A. et al.; "Control of Chemical Reactions by Feedback-Optimized Phase-shaped Femtosecond Laser Pulses"; Science Magazine, Vol. 282; October 30, 1998; pgs. 919-922.			
3.		Baltuska, Andrius et al.; "Amplitude and phase characterization of 4.5-fs pulses by frequency-resolved optical gating"; Optics Letters, Vol. 23, No. 18, September 15, 1998; pgs. 1474-1476.			
4.		Baltuska, Andrius et al.; "Visible pulse compression to 4 fs by optical parametric amplification and programmable dispersion control"; Optics Letters, Vol. 27, No. 5, March 1, 2002; pgs. 306-308.			
5.		Baumert, T. et al.; "Femtosecond pulse shaping by an evolutionary algorithm with feedback"; Appl. Phys. B 65 (1997); pgs. 779-782.			
6.		Belfield, K.D. et al.; "Two-photon photoinitiated polymerization"; J. Phys. Org. Chem. 13(12): 837-849 (December 2000).			
7.		Bhattacharya, N. et al.; Phys. Rev. Lett. 88 (2002) 137901-1.			
8.		Brattke, S. et al.; "Generation of Photon Number States on Demand via Cavity Quantum Electrodynamics"; Phys. Rev. Lett.; April 16, 2001; Vol. 86, No. 16; pp. 3534-3537.			
9.		Brixner, T. et al.; "Feedback-controlled femtosecond pulse shaping"; Appl. Phys. B 70 (Suppl.) 2000; pgs. S119-S124.			
10.	V	Broers, B. et al.; "Diffraction and focusing of spectral energy in multiphoton processes"; Phys. Rev. A; 1992; 46, 2749.			
11.	/D.F./	Broers, B. et al.; "Large interference effects of small chirp observed in 2-photon absorption"; Opt. Commun. 1992, 91, 57.			

Examiner:	/Delma Forde/	Date Considered: 04/21/2008	Ì

## PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)

Sheet 4 of 10

ATTORNEY DOCKET NO.	SERIAL NO.
6550-000057/CPE	10/791,377
APPLICANT	
Dantus et al.	
FILING DATE	GROUP
March 2, 2004	not yet assigned

OTHE	OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)				
Ref. Desig.	Examiner's Initials				
12.	/D.F./	Bucksbaum, Philip; "An atomic dimmer switch"; Nature; November 19, 1998; Vol. 396; pp. 217-219.			
13.		Buist, A.H. et al.; "Probing microscopic chemical environments with high-intensity chirped pulses"; Optics Letters 24, 244-246 (1999).			
14.		Chilla, Juan L.A. et al.; "Direct determination of the amplitude and the phase of femtosecond light pulses"; January 1, 1991, Vol. 16, No. 1; Optics Letters; pgs. 39-41.			
15.		Chu, K.C. et al.; "Direct measurement of the spectral phase of femtosecond pulses"; Optics Letters, Vol. 20, No. 8; April 15, 1995; pgs. 904-906.			
16.		Clara et al.; "Femtosecond laser mass spectroscopy of ferrocenes: photochemical stabilization by bridged cyclopentadienyl rings?"; International Journal of Mass Spectrometry, Elsevier Science Publishers; Vol. 203, no. 1-3; December 26, 2000; pp. 71-81.			
17.		Clement, Tracy Sharp et al.; "Single-Shot measurement of the amplitude and phase of ultrashort laser pulses in the violet"; January 1, 1995; Optics Letters, Vol. 20, No. 1; pgs. 70-72.			
18.		Cormack, I.G. et al.; "Practical measurement of femtosecond optical pulses using time- resolved optical gating"; Optics Communications 194 (July 15, 2001); pgs. 415-424.			
19.		Cumpston, B.H. et al.; "New Photopolymers based on Two-Photon Absorbing Chromophores and Application to Three-Dimensional Microfabrication and Optical Storage"; Mat. Res. Soc. Symp. Proc.; Vol 488.			
20.	NAME OF THE PARTY	Cumpston, B.H. et al.; "Two-photon polymerization initiators for three-dimensional optical data storage and microfabtrication"; Letters to Nature, pp. 51-54.			
21.		Dela Cruz, J.M. et al.; "Multiphoton intrapulse interference 3: Probing microscopic chemical environments"; J. Phys. Chem. A 2004.			
22.		Dietrich, P. et al.; "Determining the absolute carrier phase of a few-cycle laser pulse"; Optics Letters, Vol. 25, No. 1, January 1, 2000; pgs. 16-18.			
23.	V	Ding, Y.; "Femtosecond pulse shaping by dynamic holograms in photorefractive multiple quantum wells"; Optics Letters; May 15, 1997; Vol. 22, No. 10; pp. 718-720.			
24.	/D.F./	Dorrer, C. et al.; "Direct space-time characterization of the electric fields of ultrashort optical pulses"; Optics Letters, Vol. 27, No. 7, April 1, 2002; pgs. 548-550.			

Examiner:	/Delma Forde/	Date Considered:	04/21/2008

#### PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)

Sheet 5 of 10

ATTORNEY DOCKET No.	SERIAL NO.
6550-000057/CPE	10/791,377
APPLICANT	
Dantus et al.	
FILING DATE	GROUP
March 2, 2004	not yet assigned

OTHE	R DOCUME	NTS (including Author, Title, Date, Pertinent Pages, etc.)
Ref. Desig.	Examiner's Initials	
25.	/D.F./	Dorrer, Christophe et al.; "Precision and consistency criteria in spectral phase interferometry for direct electric-field reconstruction", J. Opt. Soc. Am. B, Vol. 19, No. 5, May 2002; pgs. 1030-1038.
26.		Drexler, W. et al.; In vivo ultrahigh-resolution optical coherence tomography"; Optics Letters; September 1, 1999; Vol. 24, No. 17; pp. 1221-1223.
27.		Dudley, John M. et al.; "Complete Characterization of Ultrashort Pulse Sources at 1550 nm"; IEEE Journal of Quantum Electronics, Vol. 35, No. 4; April 1999; pgs. 441-450.
28.		Dudovich, N. et al.; "Transform-limited pulses are not optimal for resonant multiphoton transitions"; Phys. Rev. Lett. 86, 47-50 (2001).
29.		Gallmann, L. et al.; "Spatially resolved amplitude and phase characterization of femtosecond optical pulses"; Optics Letters, Vol. 26, No. 2, January 15, 2001; pgs. 96-98.
30.		Gallmann, L. et al.; "Techniques for the characterization of sub-10-fs optical pulses: a comparison"; Appl. Phys. B 70 (Suppl), 2000; pgs. S67-S75.
31.		Garcia-Ripoll, J.J. et al.; "Speed Optimized Two-Qubit Gates with Laser Coherent Control Techniques for Ion Trap Quantum Computing"; Physical Review Letters; Vol. 91, No. 5; October 10, 2003; pg. 157901-1 - 157901-4.
32.		Geindre, J.P. et al.; "Single-shot spectral interferometry with chirped pulses"; Optics Letters, Vol. 26, No. 20, October 15, 2001; pgs. 1612-1614.
33.		Goswami, D.; "Optical pulse shaping approaches to coherent control"; Physics Reports; 374 (2003); pg. 385-481.
34.		Goswami, D.; "Ultrafast Pulse Shaping approaches to Quantum Computing"; Indian Institute of Technology; December 24, 2003.
35.		Hacker, M. et al.; "Frequency doubling of phase-modulated, ultrashort laser pulses"; Appl. Phys. B 73; (2001); pgs. 273-277.
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